

Claims

[Claim 1]

A semiconductor inspection method, characterized by microscopically observing and analyzing both the state of a sample surface which is irradiated by an electron beam or a positively charged ion beam to charge the sample surface, and the change in the state when an area in a highly charged state is irradiated with an oppositely charged ion beam or an electron beam.

[Claim 2]

A semiconductor inspection method according to claim 1, wherein a sample is irradiated with an electron beam to negatively charge the sample, the sample is observed by SEM, the sample is spot-irradiated with a positively charged ion beam, and reversal of a contrast is observed with an SEM.

[Claim 3]

A semiconductor inspection method according to claim 1, wherein a sample is irradiated with a positively charged ion beam to positively charge the sample, the sample is observed by an FIB, the sample is spot-irradiated by a negatively charged electron beam, and reversal of contrast is observed with an FIB.

[Claim 4]

A semiconductor inspection method according to claim 2 or 3, characterized in that the acceleration voltage of the

(spot removing) ion beam is set at a low acceleration of 10 kV or less.

[Claim 5]

A semiconductor inspection method according to any one of claims 2 to 4, characterized in that the spot-irradiating ion beam is an intermittent pulse with a predetermined amount of charge and the amount of charge is determined by the number of pulses.

[Claim 6]

A semiconductor inspection method according to any one of claims 1 to 5, characterized in that the analysis is performed by comparison with a standard sample.

[Claim 7]

A semiconductor inspection system comprising a composite apparatus with a double function charged particle detector including an electron gun and an ion beam gun, wherein there are means for emitting charged particles from one of the guns to the surface of a sample; for microscopic observation of the sample surface; and for irradiation of a specific area with particles charged oppositely to the charged particles emitted from the other gun.

[Claim 8]

A semiconductor inspection system according to claim 7, comprising: a means for obtaining position information of a specified area by a microscope; and a means for irradiating

the position which is designated on the basis of the position information, with a specified particle beam.

[Claim 9]

A semiconductor inspection method comprising: a first step of irradiating a predetermined area of a sample surface of a semiconductor device on which a wiring pattern is formed with a first charged particle beam to charge the predetermined area; and a second step of irradiating a second charged particle beam charged oppositely to the first charged particles, in a desired pattern in the predetermined charged area, characterized in that the change in the contrast on the sample surface after the second step from the time of the first step is observed by microscope using the first charged particle beam.